

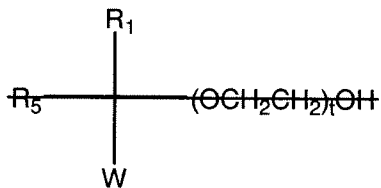
Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

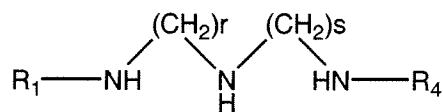
Listing of Claims:

Claims 1 to 16. (Canceled)

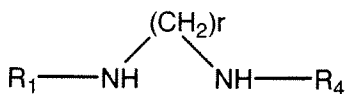
17. (Currently Amended) A process rinse solution to reduce at least one defect selected from pattern collapse and line width roughness on the surface of a substrate that has been patterned and developed, the solution comprising an aqueous solvent, a non-aqueous solvent, and at least one surfactant selected from the group of surfactants having the formula (III), (IVa), (IVb), (V), (VI), (VII), (VIII), (IXc), (Xa), or (Xd):



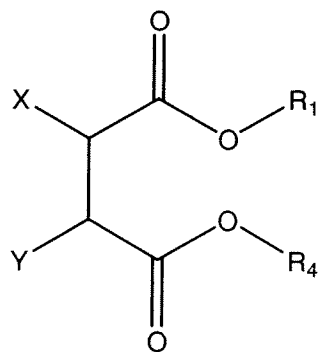
卅



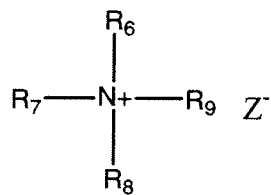
IVa



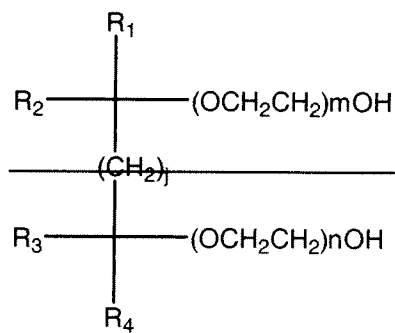
IVb



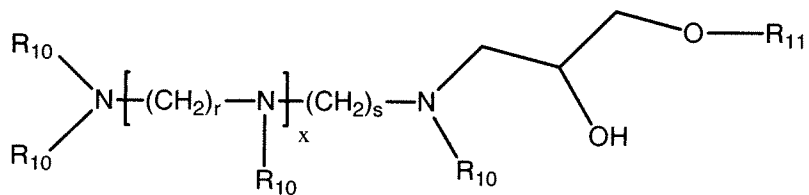
V



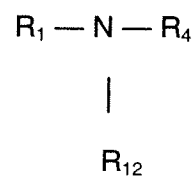
VI



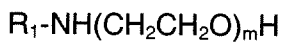
VII



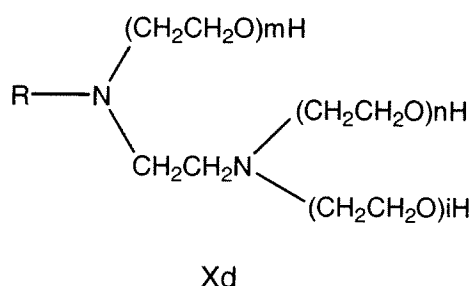
VIII



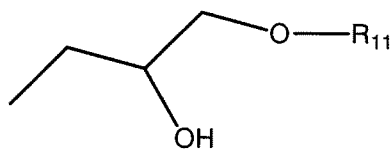
IXc

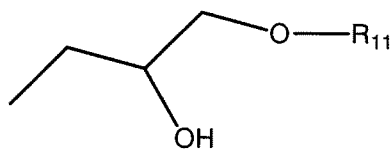


Xa

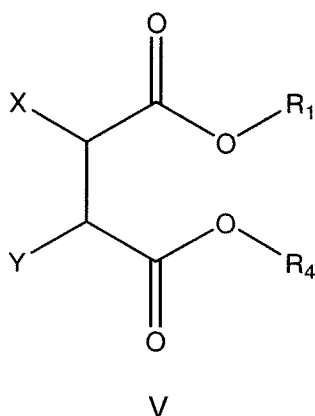


wherein R, R₁, R₄, and R₁₂ are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; ~~R₂ and R₃ are each independently a hydrogen atom or a straight, a branched, or a cyclic alkyl group having from 1 to 5 carbon atoms;~~ R₅ is a straight, a branched, or a cyclic alkyl group having from 1 to 10 carbon atoms; R₆ is a straight, a branched, or a cyclic alkyl group having from 4 to 16 carbon atoms; R₇, R₈, and R₉ are each independently a straight, a branched, or a cyclic alkyl group having from 1 to 6 carbon atoms; R₁₀ is a hydrogen atom or a group



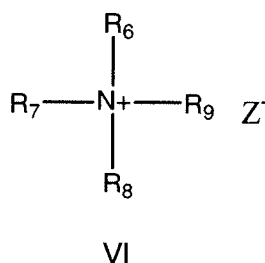
represented by the formula ; R₁₁ is a straight, a branched, or a cyclic alkyl group having from 4 to 22 carbon atoms; W is a hydrogen atom or an alkynyl group; X and Y are each independently a hydrogen atom or a hydroxyl group; Z is ~~a halide atom,~~ a hydroxyl group, an acetate group, or a carboxylate group; i, m, and n are each independently a number that ranges from 0 to 20; r and s are each independently 2 or 3; t is a number that ranges from 0 to 2; j is a number that ranges from 1 to 5; and x is a number that ranges from 1 to 6.

18. (Original) The process solution of claim 17 wherein the non-aqueous solvent is miscible in the aqueous solvent.



wherein R_1 and R_4 are each independently a straight or branched alkyl group having from 3 to 25 carbon atoms and X and Y are each independently a hydrogen atom or a hydroxyl group.

23. (Currently Amended) The process solution of claim 17 wherein the at least one surfactant is a surfactant having the following formula (VI):



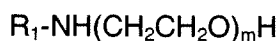
wherein R_6 is a straight or a branched alkyl group having from 4 to 16 carbon atoms; R_7 , R_8 , and R_9 are each independently a straight or a branched alkyl group having from 1 to 6 carbon atoms; and Z is ~~a halide atom~~, a hydroxyl group, an acetate group, or a carboxylate group.

24. (Canceled)

IXc

wherein R_1 , R_4 , and R_{12} are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms.

29. (Original) The process solution of claim 17 wherein the at the at least one surfactant is a surfactant having the following formula (Xa):



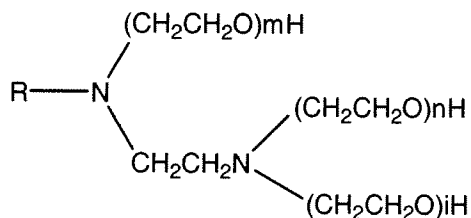
Xa

wherein R_1 is a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; and m is a number that ranges from 0 to 20.

30. (Canceled)

31. (Canceled)

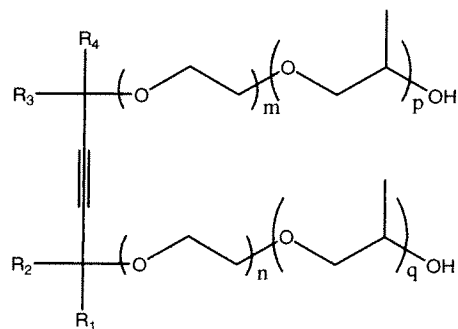
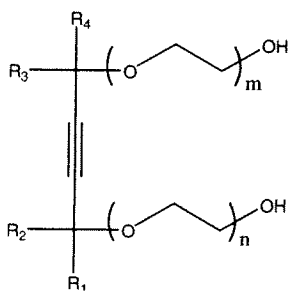
32. (Original) The process solution of claim 17 wherein the at the at least one surfactant is a surfactant having the following formula (Xd):



Xd

wherein R is independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; and i , m , and n are each independently a number ranging from 0 to 20.

33. (Canceled)
34. (Canceled)
35. (Previously Presented) The process solution of claim 17 wherein the non-aqueous solvent is at least one selected from the group consisting of: ethylether, ethylene glycol monomethyl ether, 2-methoxyethyl ether, a nitrile, lactates, pyruvates, diols, tetrahydrofuran, acetone, 1,4-dioxane, 1,3-dioxolane, ethyl acetate, cyclohexanone, acetone, 1-methyl-2-pyrrolidone, methyl ethyl ketone, dimethylformamide, dimethylacetamide, N-methyl pyrrolidone, ethylene carbonate, propylene carbonate, glycerol and derivatives, acetic acid anhydride, propionic acid and propionic acid anhydride, dimethyl sulfone, benzophenone, diphenyl sulfone, phenol, m-cresol, dimethyl sulfoxide, diphenyl ether, propylene glycol propyl ether, methanol, ethanol, 3-heptanol, 2-methyl-1-pentanol, 5-methyl-2-hexanol, 3-hexanol, 2-heptanol, 2-hexanol, 2,3-dimethyl-3-pentanol, propylene glycol methyl ether acetate, ethylene glycol, isopropyl alcohol, n-butyl ether, propylene glycol n-butyl ether, 1-butoxy-2-propanol, 2-methyl-3-pentanol, 2-methoxyethyl acetate, 2-butoxyethanol, 2-ethoxyethyl acetoacetate, 1-pentanol, and propylene glycol methyl ether.
36. (Previously Presented) The process solution of claim 17 further comprising at least one surfactant selected from the group consisting of formula (I) and (II):

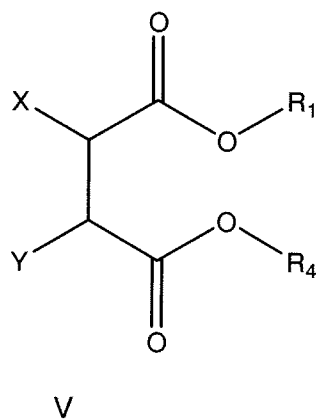
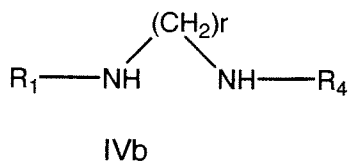
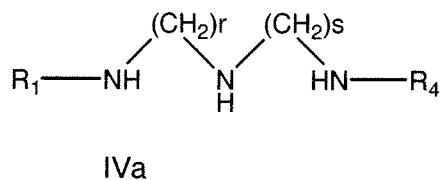
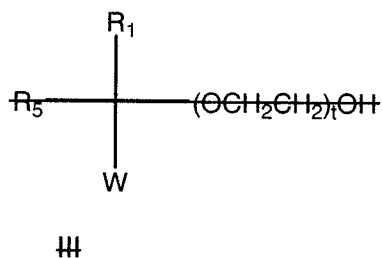


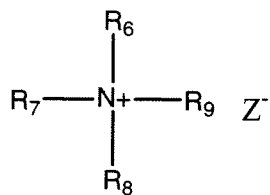
I

II

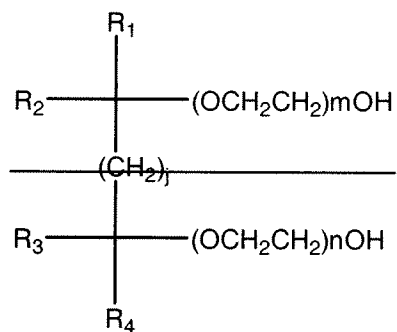
wherein p and q are each independently a number from 0 to 20.

37. (Currently Amended) A process rinse solution to reduce at least one defect selected from pattern collapse and line width roughness on the surface of a substrate that has been patterned and developed, the solution consisting of an aqueous solvent, a non-aqueous solvent, and at least one surfactant selected from the group of surfactants having the formula ~~(III)~~, (IVa), (IVb), (V), (VI), ~~(VII)~~, (VIII), (IXa), (IXb), (IXc), (Xa), (Xb), (Xc), or (Xd):

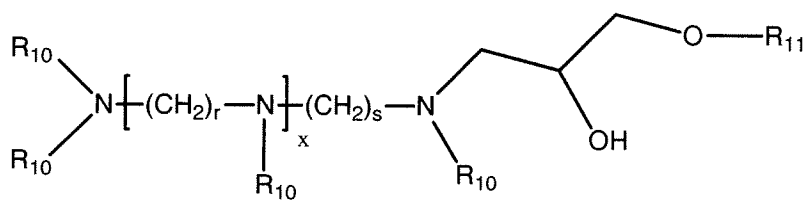




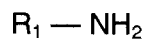
VI



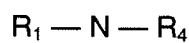
VII



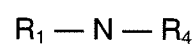
VIII



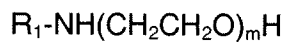
IXa



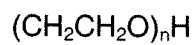
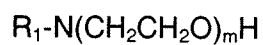
IXb



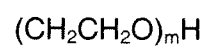
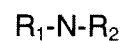
IXc



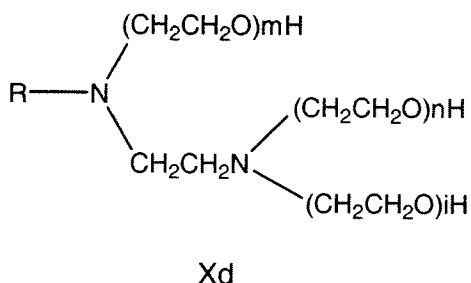
Xa



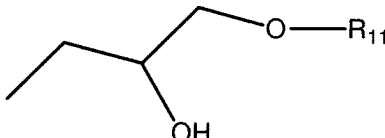
Xb



Xc



wherein R, R₁, R₄, and R₁₂ are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; ~~R₂ is and R₃ are each independently~~ a hydrogen atom or a straight, a branched, or a cyclic alkyl group having from 1 to 5 carbon atoms; R₅ is a straight, a branched, or a cyclic alkyl group having from 1 to 10 carbon atoms; R₆ is a straight, a branched, or a cyclic alkyl group having from 4 to 16 carbon atoms; R₇, R₈, and R₉ are each independently a straight, a branched, or a cyclic alkyl group having from 1 to 6 carbon atoms; R₁₀ is a hydrogen atom or a group

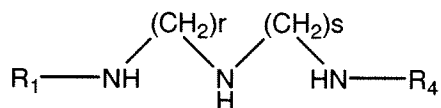
represented by the formula ; R₁₁ is a straight, a

branched, or a cyclic alkyl group having from 4 to 22 carbon atoms; W is a hydrogen atom or an alkynyl group; X and Y are each independently a hydrogen atom or a hydroxyl group; Z is ~~a halide atom~~, a hydroxyl group, an acetate group, or a carboxylate group; i, m, and n are each independently a number that ranges from 0 to 20; r and s are each independently 2 or 3; t is a number that ranges from 0 to 2; j is a number that ranges from 1 to 5; and x is a number that ranges from 1 to 6.

38. (Previously Presented) The process solution of claim 37 wherein the non-aqueous solvent is miscible in the aqueous solvent.

39. (Canceled)

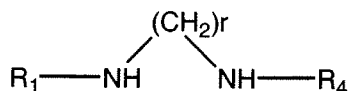
40. (Previously Presented) The process solution of claim 37 wherein the at least one surfactant is a surfactant having the following formula (IVa):



IVa

wherein R₁ and R₄ are each independently a straight or a branched alkyl group having from 3 to 25 carbon atoms and r and s are each independently 2 or 3.

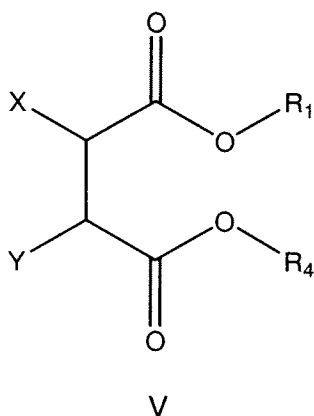
41. (Previously Presented) The process solution of claim 37 wherein the at least one surfactant is a surfactant having the following formula (IVb):



IVb

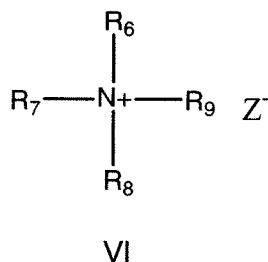
wherein R₁ and R₄ are each independently a straight or a branched alkyl group having from 3 to 25 carbon atoms and r is 2 or 3.

42. (Previously Presented) The process solution of claim 37 wherein the at least one surfactant is a surfactant having the following formula (V):



wherein R_1 and R_4 are each independently a straight or branched alkyl group having from 3 to 25 carbon atoms and X and Y are each independently a hydrogen atom or a hydroxyl group.

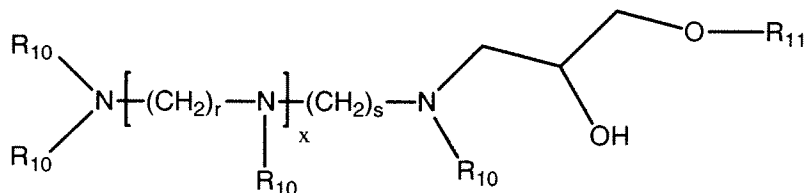
43. (Currently Amended) The process solution of claim 37 wherein the at least one surfactant is a surfactant having the following formula (VI):



wherein R_6 is a straight or a branched alkyl group having from 4 to 16 carbon atoms; R_7 , R_8 , and R_9 are each independently a straight or a branched alkyl group having from 1 to 6 carbon atoms; and Z is a halide atom, a hydroxyl group, an acetate group, or a carboxylate group.

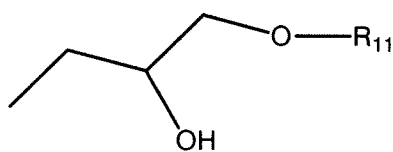
44. (Canceled)

45. (Previously Presented) The process solution of claim 37 wherein the at least one surfactant is a surfactant having the following formula (VIII):



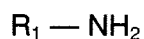
VIII

wherein R_{10} is a hydrogen atom or a group represented by the formula



; R_{11} is independently a straight, branched, or cyclic alkyl group having from 4 to 22 carbon atoms; r and s are each independently 2 or 3; and x is a number that ranges from 1 to 6.

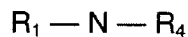
46. (Previously Presented) The process solution of claim 37 wherein the at the least one surfactant is a surfactant having the following formula (IXa):



IXa

wherein R_1 is a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms.

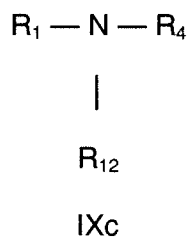
47. (Previously Presented) The process solution of claim 37 wherein the at the least one surfactant is a surfactant having the following formula (IXb):



IXb

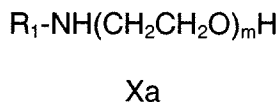
wherein R_1 and R_4 are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms.

48. (Previously Presented) The process solution of claim 37 wherein the at the at least one surfactant is a surfactant having the following formula (IXc):



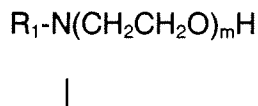
wherein R_1 , R_4 , and R_{12} are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms.

49. (Previously Presented) The process solution of claim 37 wherein the at the at least one surfactant is a surfactant having the following formula (Xa):



wherein R_1 is a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; and m is a number that ranges from 0 to 20.

50. (Previously Presented) The process solution of claim 37 wherein the at the at least one surfactant is a surfactant having the following formula (Xb):

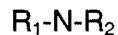




Xb

wherein R_1 and R_2 are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; and m and n are each independently a number that ranges from 0 to 20.

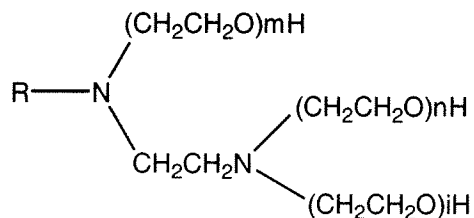
51. (Previously Presented) The process solution of claim 37 wherein the at the at least one surfactant is a surfactant having the following formula (Xc):



Xc

wherein R_1 and R_2 are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; and m is a number that ranges from 0 to 20.

52. (Previously Presented) The process solution of claim 37 wherein the at the at least one surfactant is a surfactant having the following formula (Xd):



Xd

wherein R is independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; and i , m , and n are each independently a number ranging from 0 to 20.

53. (Previously Presented) The process solution of claim 37 wherein the non-aqueous solvent is at least one selected from the group consisting of: ethylether, ethylene glycol monomethyl ether, 2-methoxyethyl ether, a nitrile, lactates, pyruvates, diols, tetrahydrofuran, acetone, 1,4-dioxane, 1,3-dioxolane, ethyl acetate, cyclohexanone, acetone, 1-methyl-2-pyrrolidone, methyl ethyl ketone, dimethylformamide, dimethylacetamide, N-methyl pyrrolidone, ethylene carbonate, propylene carbonate, glycerol and derivatives, acetic acid anhydride, propionic acid and propionic acid anhydride, dimethyl sulfone, benzophenone, diphenyl sulfone, phenol, m-cresol, dimethyl sulfoxide, diphenyl ether, propylene glycol propyl ether, methanol, ethanol, 3-heptanol, 2-methyl-1-pentanol, 5-methyl-2-hexanol, 3-hexanol, 2-heptanol, 2-hexanol, 2,3-dimethyl-3-pentanol, propylene glycol methyl ether acetate, ethylene glycol, isopropyl alcohol, n-butyl ether, propylene glycol n-butyl ether, 1-butoxy-2-propanol, 2-methyl-3-pentanol, 2-methoxyethyl acetate, 2-butoxyethanol, 2-ethoxyethyl acetoacetate, 1-pentanol, and propylene glycol methyl ether.